

WHAT IS CLAIMED IS:

1. A pipe structure comprising:
a double pipe having a resin inner pipe and a
resin outer pipe covering an outside of the inner pipe;
5 and
a discharge mechanism for discharging fluid in a
space between the inner pipe and the outer pipe.
2. The structure according to claim 1, wherein said
double pipe is used in a vacuum chamber having a vacuum
10 atmosphere.
3. The structure according to claim 1, wherein the
inner or outer pipe has a bellows structure or coil
shape.
4. The structure according to claim 2, further
15 comprising a stage in the vacuum chamber, wherein said
double pipe is coupled to the stage.
5. The structure according to claim 1, wherein the
inner pipe in the outer pipe includes a plurality of
inner pipes.
- 20 6. The structure according to claim 1, wherein said
double pipe keeps a vacuum space between the inner pipe
and the outer pipe.
7. The structure according to claim 1, wherein the
inner pipe is formed from a flexible resin material.
- 25 8. The structure according to claim 1, wherein the
inner pipe is formed from a more flexible material than
a material of the outer pipe.

9. The structure according to claim 1, wherein the outer pipe is formed from a resin material nearly free from degassing.

10. The structure according to claim 1, wherein the
5 outer pipe is thinner than the inner pipe.

11. The structure according to claim 1, wherein the outer pipe has a thickness of 10 μm (inclusive) to 100 μm (inclusive).

12. A pipe structure comprising:

10 a double pipe having at least one inner pipe and/or at least one electric wire and a resin outer pipe covering outsides of the inner pipe and/or the electric wire; and

a discharge mechanism for discharging fluid in a
15 space between the inner pipe and/or the electric wire and the outer pipe.

13. The structure according to claim 12, wherein the outer pipe covers the outsides of the inner pipe and/or the electric wire at once.

20 14. The structure according to claim 13, wherein the inner pipe and/or the electric wire in the outer pipe is one-dimensionally aligned in a direction in which flexural rigidity in a bending direction is low.

15. A alignment apparatus wherein the apparatus
25 comprises the pipe structure defined in claim 1 and is arranged in a vacuum chamber.

16. An electron beam lithography apparatus

characterized by comprising the alignment apparatus defined in claim 15.

17. An exposure apparatus characterized by comprising the alignment apparatus defined in claim 15.

5 18. The apparatus according to claim 17, wherein an F₂ laser or Ar₂ laser is used as a light source.

19. A semiconductor device manufacturing method comprising the steps of:

10 installing manufacturing apparatuses for various processes including the exposure apparatus defined in claim 17 in a semiconductor manufacturing factory; and manufacturing a semiconductor device by using the manufacturing apparatuses in a plurality of processes.

15 20. The method according to claim 19, further comprising the steps of:

connecting the manufacturing apparatuses by a local area network; and

20 communicating information about at least one of the manufacturing apparatuses between the local area network and an external network outside the semiconductor manufacturing factory.

21. The method according to claim 20, characterized in that a database provided by a vendor or user of the exposure apparatus is accessed via the external network
25 to obtain maintenance information of the manufacturing apparatus by data communication, or production management is performed by data communication between

the semiconductor manufacturing factory and another semiconductor manufacturing factory via the external network.

22. A semiconductor manufacturing factory comprising:

5 manufacturing apparatuses for various processes including the exposure apparatus defined in claim 17;

a local area network for connecting said manufacturing apparatuses; and

10 a gateway which allows the local area network to access an external network outside the factory,

wherein information about at least one of said manufacturing apparatuses can be communicated.

23. A maintenance method for the exposure apparatus defined in claim 17 that is installed in a

15 semiconductor manufacturing factory, comprising the steps of:

causing a vendor or user of the exposure apparatus to provide a maintenance database connected to an external network of the semiconductor manufacturing factory;

20 authorizing access from the semiconductor manufacturing factory to the maintenance database via the external network; and

transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network.

24. The apparatus according to claim 17, wherein the

exposure apparatus further comprises a display, a network interface, and a computer for executing network software, and

5 maintenance information of the exposure apparatus can be communicated via the computer network.

25. The apparatus according to claim 24, wherein the network software is connected to an external network of a factory where the exposure apparatus is installed, provides on said display a user interface for accessing
10 a maintenance database provided by a vendor or user of the exposure apparatus, and enables obtaining information from the database via the external network.

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